Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

THE

AMERICAN NATURALIST.

VOL. X. — MARCH, 1876. — NO. 3.

A COLONY OF BUTTERFLIES.

BY AUG. R. GROTE.

ABOUT one hundred thousand years ago, during the decline of the ice period, a colony of butterflies settled in New England. They chose for their territory Mount Washington, in New Hampshire, and their descendants occupy the rocky summit of that mountain to this day. Mount Washington is 6293 feet high, and the White Mountain butterflies are not found below an elevation of about 5600 feet. Between this height and the cloud-capped summit, the butterflies disport during the month of July of every year. The bare and inhospitable summit affords little vegetation, but the White Mountain butterflies find there food upon which they thrive. Both Mr. Sanborn and Mr. Scudder have found the caterpillar feeding upon the sedges which grow, as best they may, in hollows and between the rocks. The brown butterfly which succeeds the caterpillar measures about one and eight tenths inches from tip to tip of the extended fore wings. Above, the wings are feebly marked; beneath, the hind wings are crossed by a dark median band with its outer edges deeper brown and irregular, while beyond the band the wings are marbled, brown and white. Naturalists know the White Mountain butterfly by the name of *Oeneis semidea*, and its first biographer was Thomas Say, who described it in the year 1828. Previously, Mr. Thomas Nuttall, the botanist, had collected specimens of the butterfly, while Say's original figure of the species was drawn from an individual presented to him by Mr. Charles Pickering, of Salem.

It is 1800 miles west from Mount Washington to Long's Peak, Colorado. In this direction, over all the level stretch of country, no butterflies like our White Mountain butterfly are to be met with. But in Colorado, species similar to the White Mountain butterfly, if not exactly like it, are found again occupying ele-

Copyright, A. S. PACKARD, JR. 1876.

vated lands. To the northward it is 1000 miles to Hopedale, Labrador, and here again very similar butterflies are found living in that northern region.

This is a strange distribution for a butterfly, and so the question comes up as to the manner in which it was brought about. By comparing what has been found out with regard to past conditions of the earth and the present state of things, a solution of the question has been offered. This solution gives us the ice period in North America as the agent which has induced the present distribution of the genus to which the White Mountain butterfly belongs. And the colonization of the butterfly on our New England mountains would have been effected in this wise.

Before the ice period commenced in New England, it had gathered in the extreme north of the continent. The ice gradually and very slowly advanced year by year to the southward. Always more snow fell than was melted, and this snow stayed summer and winter, and accumulated more and more. It consolidated into *nevé* and glacial ice. Forming on the highest lands, the ice-rivers filled the ravines and joined upon the plains the main body of ice which was pressing southward from the pole. Summer and winter still alternated, but, as is the case now at the extreme north, the summers were short and the winters long. The advancing ice destroyed or drove before it the insects and animals of the warmer climates, which it chilled by its approach. But it was kind to its own children. It brought down with it its *Oeneis* butterflies and its reindeer. Before its feet it spread food for both of these, year by year, always pushing food and animals to the south. At the probable rate of less than a mile in a hundred years, it brought them at last into Virginia, from the farthest north; not the Virginia of to-day, but Virginia changed into an Arctic scene.

At length the climate changed. The point of farthest advance reached, the ice began to retrace its steps. And it called its own back with it, alluring them by their food, scattered ever farther and farther to the north. At some time the lengthening summers and shortening winters brought the main ice sheet back into New England. From Southern New York to Connecticut, to Massachusetts, to Vermont, to New Hampshire, it retreated all the way. It was as the retreat of an army with all its baggage and equipments, and in perfect order. Year by year it called upon its plants, its butterflies, its animals, and they followed in its royal train. It had overridden all obstacles, all lives and constitutions, and in its retreat it shed, over the lands which again saw the sun, floods of water, the source of fresh life and civilizations. But it was careful of its own plants and animals; they were to go back with the ice, nor be seduced by the lakes and streams its retreat unveiled, and so become companions to the mammoth. And it succeeded, for the most part, until it reached the White Mountains. Though year by year the individual butterflies perished, they planted their successors; the longer-lived reindeers laid their bones by the way, and in the Connecticut Valley itself, but fresh herds still were ready to follow the northward march of the great glacier.

Out of the valley of the White Mountains the main ice mass gradually retreated; and here it lost some of its followers. At that time the White Mountains must have presented an appearance not unlike the Alps of to-day, an aspect which, owing to their inferior elevation, they have since lost under a climate growing in warmth. The local glaciers, which then filled the ravines, attracted some of the wayward, flitting *Oeneis* butterflies by a display of the food plants which they had harbored and detained from the main glacier, Year after year the great glacier retreated farther and farther north, followed by the main body of its train, — plants, butterflies, and animals, — the while some of these foolish butterflies were beguiled by the shallow ice-rivers which then filled the ravines of Mount Washington. Return became at length impossible. They advanced behind the deceiving local glaciers step by step up the mountain-side, pushed up from below by the warm climate, which to them was uncongenial, until they reached the mountain peak, now bare of snow in the short summer. Here, blown sidewise by the wind, they patiently cling to the rocks. Or, in clear weather, on weak and careful wing, they fly from flower of stemless mountain-pink to blue-berry, swaying from their narrow tenure of the land. Drawn into the currents of air that sweep the mountain's side, they are forced downwards, to be parched in the hot valleys below. Yet they maintain themselves. They are fighting it out on that line. They are entrapped, and must die out there by natural causes unless certain entomologists sooner extirpate them by pinning them up in collections of insects. What time, in Tuckerman's Ravine, I see the ill-advised collector, net in hand, swooping down on this devoted colony of ancient lineage and more than Puritan affiliation, I wonder if, before it is too late, there will not be a law passed to protect the butterflies from the cupidity of their pursuers.

This is the story of a colony of New England butterflies. I commend this colony to the protection of all good citizens of the State of New Hampshire.

◆

THE GAME FALCONS OF NEW ENGLAND: THE GOSHAWK.

BY W. WOOD, M. D.

ALTHOUGH this bird (*Astur atricapillus*) has not the characteristic markings of the true falcon, yet it can be trained to capture game. It was considered by Audubon, Sabine, and others to be the same as the European goshawk, which was so highly prized for sporting. Says Wilson, "If this be not the celebrated goshawk formerly so much esteemed in falconry, it is very closely allied to it." The poet Chaucer in alluding to it says, —

> "Riding on hawking by the river,
> With grey goshawk in hand."

Falconry and hawking, as defined by our lexicographers, are synonymous, but formerly birds of sport were divided into two classes, those of falconry and those of hawking. This bird came under the latter class. Mr. Pennant informs us that "the goshawk is used by the Emperor of China in his sporting excursions, and is considered the best of all hawks for falconry." The same writer further says that he "examined a specimen from America which was superior in size to the European." Whether the American and the European are identical I am unable to say; but many of our ornithologists at the present time consider them specifically distinct. Until quite recently, the tendency of ornithologists has been to make as many new species out of one bird as possible. Every change of locality necessitating a different construction of nest, and every slight change in color, arising from climacteric causes, has been seized upon to create new species. Happily for science there is now a reaction taking place among our best ornithologists. Says Professor Baird, "I take more pains now to subordinate forms once considered specific, than I do to establish them as such." It is not impossible or even improbable that our goshawk may yet be considered identical with the European species, and our perigrine falcon with its European congener. The goshawk is the handsomest of all our rapacious birds, and is so beautifully marked as to be easily distinguished from all our hawks. It is not very common in any part